CLAIMS

We claim:

1. A method for marking a target media using a microlaser which upon reaching an absorbed power saturation threshold emits a high peak power pulse of light, said method comprising:

driving the microlaser at a simmer power level selected to maintain the microlaser below the saturation threshold and to limit the activation time of the microlaser;

directing the microlaser at the target media on which the mark is to be made;

increasing the power applied to the microlaser to the saturation threshold to cause the microlaser to emit a pulse of light for forming the mark; and

decreasing the power applied to the microlaser to the simmer level after the mark is formed.

2. The method of claim 1, including directing said pulse of light emitted by said saturable absorber along a path toward the target media.

3. The method of claim 1, including directing said pulse of light with at least one mirror.

4. The method of claim 3, in which said at least one mirror is pivotally mounted, and directing said pulse of light includes pivoting said mirror.

5. The method of claim 1, including directing said pulse of light through a fiber optic material.

6. The method of claim 2, including feeding said target media into the path of said pulse of light.

7. The method of claim 1, in which said predetermined level below the saturation threshold is at least 50% of the saturation threshold.

8. The method of operating a laser marking/imaging system as in claim 1, in which said predetermined level below the saturation threshold is at least 90% of the saturation threshold.

9. The method of claim 1, wherein the microlaser is a passively Q-switched laser.

10. A laser marking/imaging system comprising:

a passively Q-switched microlaser having a saturable absorber which upon reaching a saturation power threshold emits a pulse of light through an optical output;

control circuitry electrically connected to said microlaser to maintain the microlaser in a simmer mode below said saturation power threshold when not providing a mark, and for driving the microlaser to the saturation power threshold to emit a pulse of light when a mark is required; and

a guidance mechanism which directs said pulse of light from said optical output along a path toward an image receiving target when said control circuit is in said lasing mode.

11. The laser marking/imaging system as in claim 10, in which said guidance mechanism includes a flexible fiber optic material having an input end which receives said

pulse of light from said optical output and an output end through which said pulse of light exits said fiber optic material.

12. The laser marking/imaging system as in claim 11, in which said output end of said fiber optic material is mounted to a movable carriage disposed adjacent said image receiving target.

13. The laser marking/imaging system as in claim 10, in which said guidance system includes at least one mirror which directs said pulse of light from said optical output.

14. The laser marking/imaging system as in claim 13, in which said at least one mirror is pivotally mounted.

15. The laser marking/imaging system as in claim 10, including a media feed assembly feeding an image receiving target into the path of said pulse of light.

16. The laser marking/imaging system as in claim 15, in which said media feed assembly includes a platen supporting the image receiving target in the path of said pulse of light.

17. The laser marking/imaging system as in claim 16, in which at least one of said platen and at least a portion of said guidance system is movable to vary the distance between said platen and said at least a portion of said guidance distance.

18. The laser marking/imaging system as in claim 10, in which said guidance system includes a carriage movable relative to said optical output, and said carriage supports structure which directs said pulse of light toward the image receiving target.

19. The laser marking/imaging system as in claim 10, including a platform disposed in the path of said light pulse for supporting the image receiving target in the path of said light pulse.

20. The laser marking/imaging system as in claim 19, in which said platform includes at least one degree of freedom.

21. The laser marking/imaging system as in claim 10, in which said control circuitry is disposed in an electrical enclosure and said guidance mechanism is disposed in a printing enclosure separated from said electrical enclosure.

22. The laser marking/imaging system as in claim 21, in which said electrical enclosure and said printing enclosure are separated by a common wall.

23. The laser/imaging system as in claim 10, in which power provided to said microlaser is maintained at a power level of at least 50% of said power threshold in said simmer mode.

24. The laser/imaging system as in claim 10, in which power provided to said microlaser is maintained at a power level of at least 90% of said power threshold in said simmer mode.

25. The laser/imaging system as in claim 10, wherein said control circuitry is further connected to a cooling system to drive the cooling system and to a temperature sensor to monitor an actual temperature and wherein the control circuit further comprises a controller for driving the cooling system.

26. The laser imaging system as in claim 25, wherein the controller employs a proportional-integral-differential loop to drive the microlaser.

27. The laser imaging system as in claim 25, further comprising a photodiode electrically coupled to the microlaser and to the controller, the photodiode providing feedback when the microlaser is activated wherein the controller monitors the repetition rate of the microlaser.

28. A method for operating a microlaser having a saturable absorbed power threshold, the method comprising the following steps:

applying power to the microlaser at a simmer level selected to maintain the laser below the absorbed power threshold;

determining when a pulse is required; and

increasing the power applied to the microlaser to a level above the absorbed power threshold, wherein the microlaser emits a pulse.

29. The method as defined in claim 28, further comprising the step of monitoring a temperature level of the microlaser to maintain the microlaser within a selected operational temperature range.

30. The method as defined in claim 29, further comprising the step of employing a proportional-integral-derivative loop to maintain a temperature of the microlaser within a predetermined range.

31. The method as defined in claim 28, further comprising the steps of activating a photodiode whenever the microlaser is actuated and monitoring the photodiode to determine a repetition rate of the microlaser.